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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/645,690	08/24/2000	Lizhong Sun	4215/PDD/CMP/RKK	4428

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PATENT COUNSEL
APPLIED MATERIALS. INC
P.O. BOX 450A
SANTA CLARA, CA 95052

EXAMINER

WINTER, GENTLE E

ART UNIT	PAPER NUMBER
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1746

DATE MAILED: 12/18/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary

Application No.

09/645,690

Applicant(s)

SUN ET AL.

Examiner

Gentle E. Winter

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 December 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 and 26-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 and 26-32 is/are rejected.
- 7) ☒ Claim(s) 5 and 32 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 December 2000, is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

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DETAILED ACTION

Applicant's arguments with respect to claim 1-18 have been considered and are not persuasive.

New claims 26-32 are, by this Official action, finally rejected.

Applicant in paper 9 canceled claims 19-25.

Claim Rejections - 35 USC § 112--Withdrawn

1. Claims 5 and 10 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite, specifically:

i. Claim 5 recited the limitation "deionized water" in line 4. It was presumed that applicant intended DI water. Applicant clarified that applicant wishes to broaden the claim by deleting "deionized".

ii. Claim 10 recited "removing any substrates from the wafer surface before applying the cleaning composition to the polishing pad surface."

It was assumed that surface coatings other than the wafer itself were intended, applicant that this was intended. The statement by applicant that the amendments "merely restate what was inherent" is in conflict with examiner's perception of reality.

Claim Rejections - 35 USC § 112--New

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it

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pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 26-32 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a method of cleaning a polishing pad, does not reasonably provide enablement for generalized “cleaning”. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to practice the invention commensurate in scope with these claims. The claims are currently drawn to a method of cleaning, but what is being cleaned is at least ambiguous. Because examination is impossible without some claim construction, the claims are construed to be drawn to a method of cleaning a CMP polishing pad.

4. Claims 4 and 15 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The amendment filed 12/3/2002 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: the pH range of “about 5 to 10” is not apparently supported in the specification as originally filed.

5. Applicant has failed to identify where support for the new pH range is found. Further, applicant has failed to assert that no new matter has been added, and has failed to point out where support for any of the amendments may be found. In the interests of compact prosecution and expediency, applicant is urged to exercise care in citing support for amendments when communicating with the Office.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 26-32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 26, recites a method for cleaning, but fails to recite cleaning steps. Rather, the claim recites, "applying ...a cleaning composition", and then goes on to recite the components of the composition. Claim 32 appears to recite the step of using the pad after it has been cleaned.

Claim Objections--Withdrawn and Maintained in Parts and New

8. Claims 4, 5, and 15 were objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant amended the claims but apparently introduced new matter into claims 4 and 15.

b. With respect to claims 4 and 15 the pH range indicated was identically disclosed in the base claim. The amendment further narrows the claim thus obviating the objection.

c. With respect to claim 5, it was not clear what additional method steps were contemplated. The method appeared to be drawn to describing a property. Applicant's amendment does not provide an active step, but now is drawn to describing an inherent property. The claim shall actively recite a step.

9. Claim 32 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the

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claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 32 appears to be drawn to a use of the pad that was presumed to have been the article cleaned by the method of claim 27.

Response to Applicant's Arguments

Applicant has argued that figure 3 of the *Small* reference illustrates:

the corrosion rate of aluminum wafer versus the amount of amines dissolved in a water rinse system to show that small quantities of amines will be very corrosive to the metal on the wafer, such as about 3-20% or less of amines in water, as disclosed see e.g. (column 3, lines 7-10). Therefore, *Small et al.* teaches away from the use of about 3-20% or less of amines in their post clean treatment composition because it can cause corrosion of metal structures on a wafer.

Applicant's arguments are not persuasive because they argue limitations not in the claims. The claims are drawn to an amine concentration of 0.1 to 3.0 Wt%. Additionally, no credible argument has been put forth suggesting that *Small* does not identically disclose each and every limitation.

The response to the obviousness arguments appears to be nothing more than a parsing of the patents and arguing that neither patent fully discloses the each and every limitation. Since the rejection is an *obviousness* rejection, and two references are relied upon *in the aggregate*. The combined references provide each and every element of the claimed invention and explicitly provide the motivation for making the combination. As such the arguments are not persuasive.

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The new claims are similarly rejected for the reasons set forth below.

Claim Rejections - 35 USC § 102--Maintained

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1-4, 8, 12-16, and 27-28, as currently understood, are rejected under 35

U.S.C. 102(b) as being anticipated by United States Patent No. 5,981,454 to Small.

11. Small discloses a method of cleaning a polishing pad comprising applying to the polishing pad surface a cleaning composition comprising applying to the polishing pad surface a cleaning composition comprising a composition that has an amine concentration that includes at least one endpoint of the claimed range, specifically 3.0 Wt% of at least one organic compound containing one or more amine or amide groups. The explicitly disclosed range is 3-20% (column 3, line 52 *et seq.*) however figure 3 appears to contemplate a range of activity below 3% (see e.g. column 4, line 6 *et seq.* and also see figure 3). Small further discloses an acid or base such that the composition has a pH of between 3.5 and 7, which anticipates the range 5.0 to about 12.0, and water. See (column 2, line 37 *et seq.* and column 3, line 52 *et seq.*). Small further discloses using DI water, ethylene diamine, and acetic acid (column 14, line 43 through column 16). A water rinse is also disclosed (column 1, line 38 *et seq.*).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claim 5-7, 9-11, 17-18, and 29-32, as currently understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Small in view of United States Patent No. 6,280,299 to Kennedy et al.

13. Each and every limitation of claims 6, 7, 9, 10, 11, 17, and 18 are identically disclosed in Small, except that Small apparently fails to explicitly disclose applying the solution to a rotating polishing pad at a flow rate of about 10 to 600 ml/min. Kennedy et al. discloses using a flowrate between 230 and 6000 ml/min (e.g. column 6, line 58 *et seq.*). The artisan would have been motivated to make the instant combination for the reasons explicitly set forth in Kennedy et al. Kennedy discloses that the pad cleaning flowrates and pressures are optimized based on the conditions and materials used in the pad cleaning process. In a larger sense, the artisan would have been motivated to select a flow rate high enough to reduce the pad loading to an acceptable level, while minimizing solvent waste. Similarly, it is submitted that duration of the flow would be a matter of routine optimization, but is explicitly disclosed in Kennedy et al. as about 5 to 20 seconds (see e.g. column 7, line 47 *et seq.*). Again the motivation is explicitly disclosed in Kennedy et al. specifically, optimizing the cleaning of the pad. Further, Kennedy et al. and the instant invention appear to be performing substantially the same task, in substantially the same way, for substantially the same reason.

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Conclusion

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gentle E. Winter whose telephone number is (703) 305-3403.

The examiner can normally be reached on Monday-Friday, 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy P. Gulakowski can be reached on (703) 308-4333. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Gentle E. Winter
Examiner
Art Unit 1746

December 13, 2002



RANDY P. GULAKOWSKI
SUPERVISOR EXAMINER
TECHNOLOGY CENTER 1700